OIPE IAP41
JUN 06 2007
PATENT & TRADEMARK OFFICE

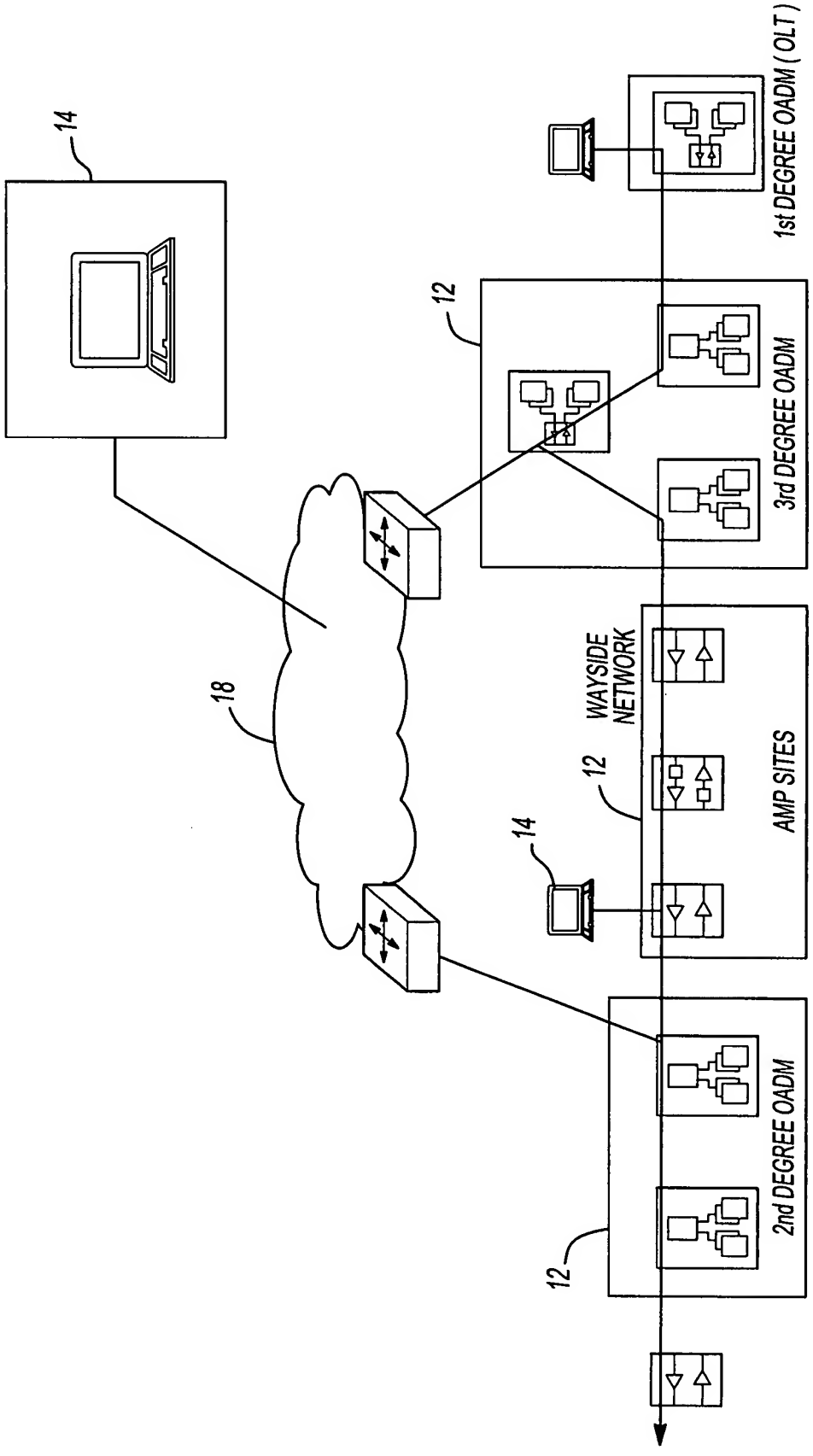

Fig-1

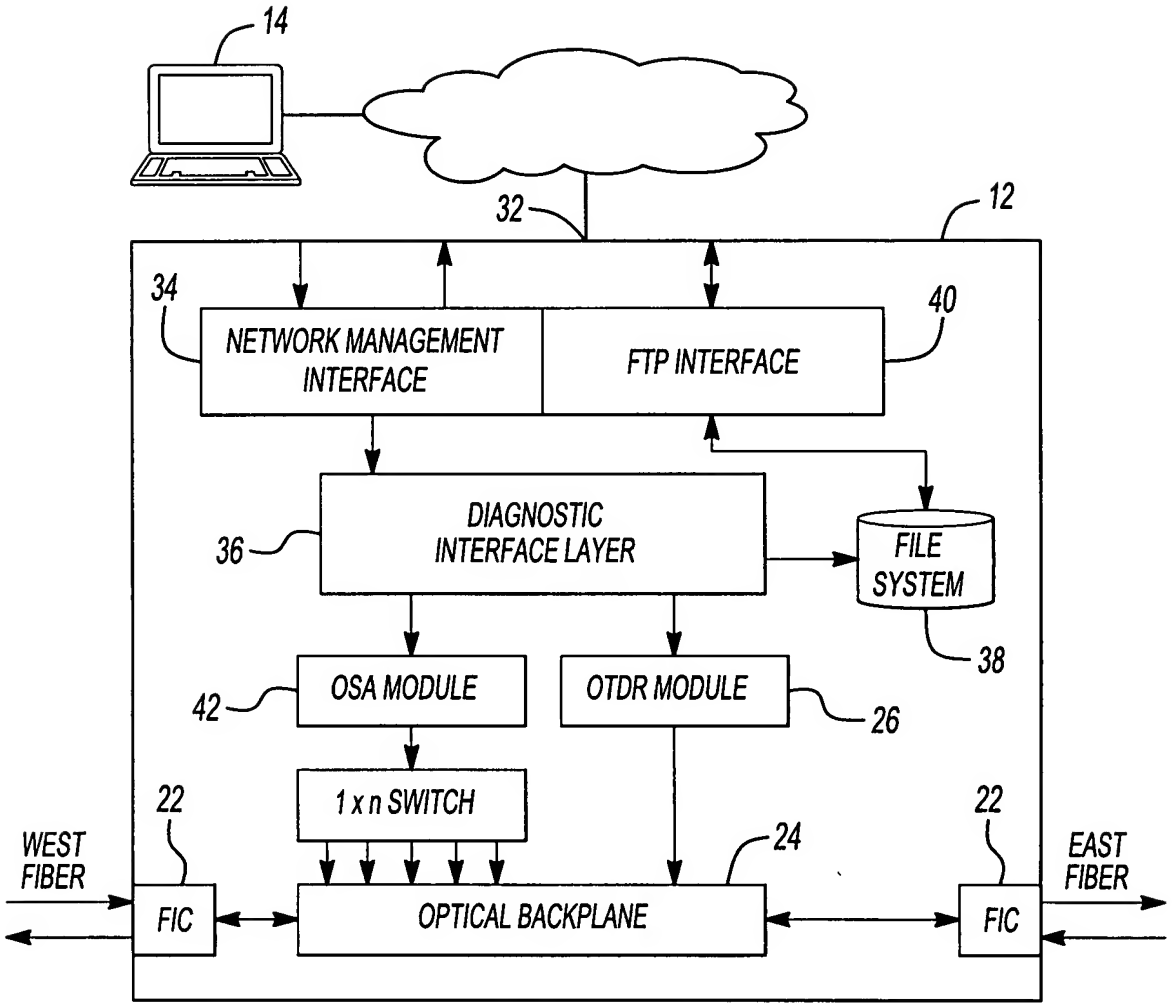
14
32
12
34
NETWORK MANAGEMENT INTERFACE
FTP INTERFACE
40
DIAGNOSTIC INTERFACE LAYER
36
FILE SYSTEM
38
OSA MODULE
42
OTDR MODULE
26
1 x n SWITCH
22
22
24
WEST FIBER
EAST FIBER
FIC
OPTICAL BACKPLANE
FIC

Fig-2

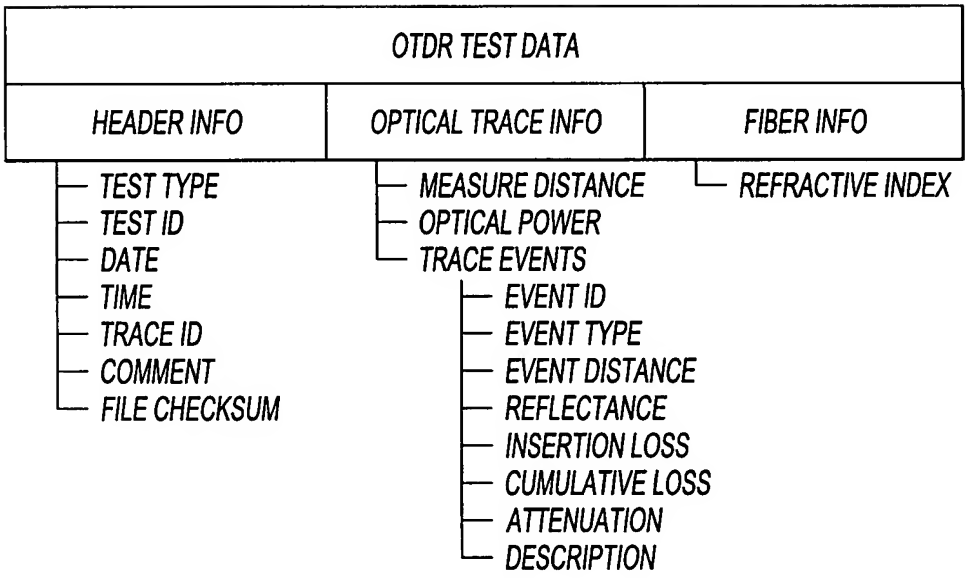
OTDR TEST DATA
HEADER INFO
OPTICAL TRACE INFO
FIBER INFO
TEST TYPE
TEST ID
DATE
TIME
TRACE ID
COMMENT
FILE CHECKSUM
MEASURE DISTANCE
OPTICAL POWER
TRACE EVENTS
EVENT ID
EVENT TYPE
EVENT DISTANCE
REFLECTANCE
INSERTION LOSS
CUMULATIVE LOSS
ATTENUATION
DESCRIPTION
REFRACTIVE INDEX

Fig-3

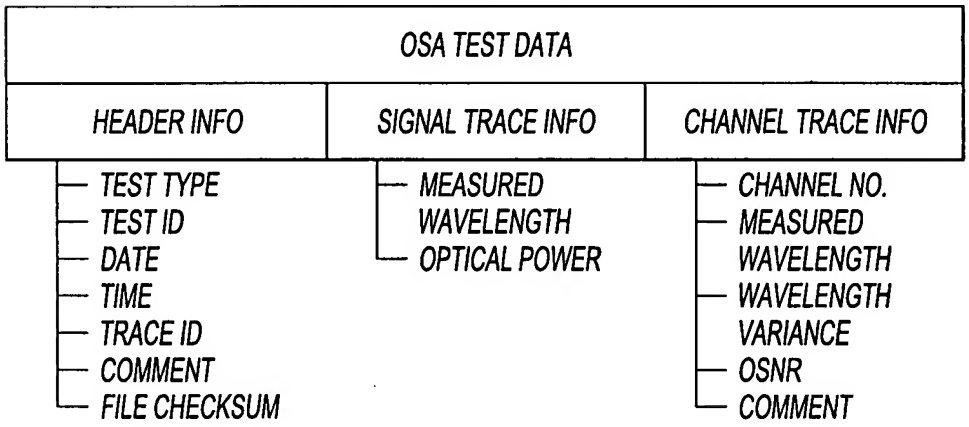
OSA TEST DATA
HEADER INFO
SIGNAL TRACE INFO
CHANNEL TRACE INFO
TEST TYPE
TEST ID
DATE
TIME
TRACE ID
COMMENT
FILE CHECKSUM
MEASURED WAVELENGTH
OPTICAL POWER
CHANNEL NO.
MEASURED WAVELENGTH
WAVELENGTH VARIANCE
OSNR
COMMENT

Fig-5

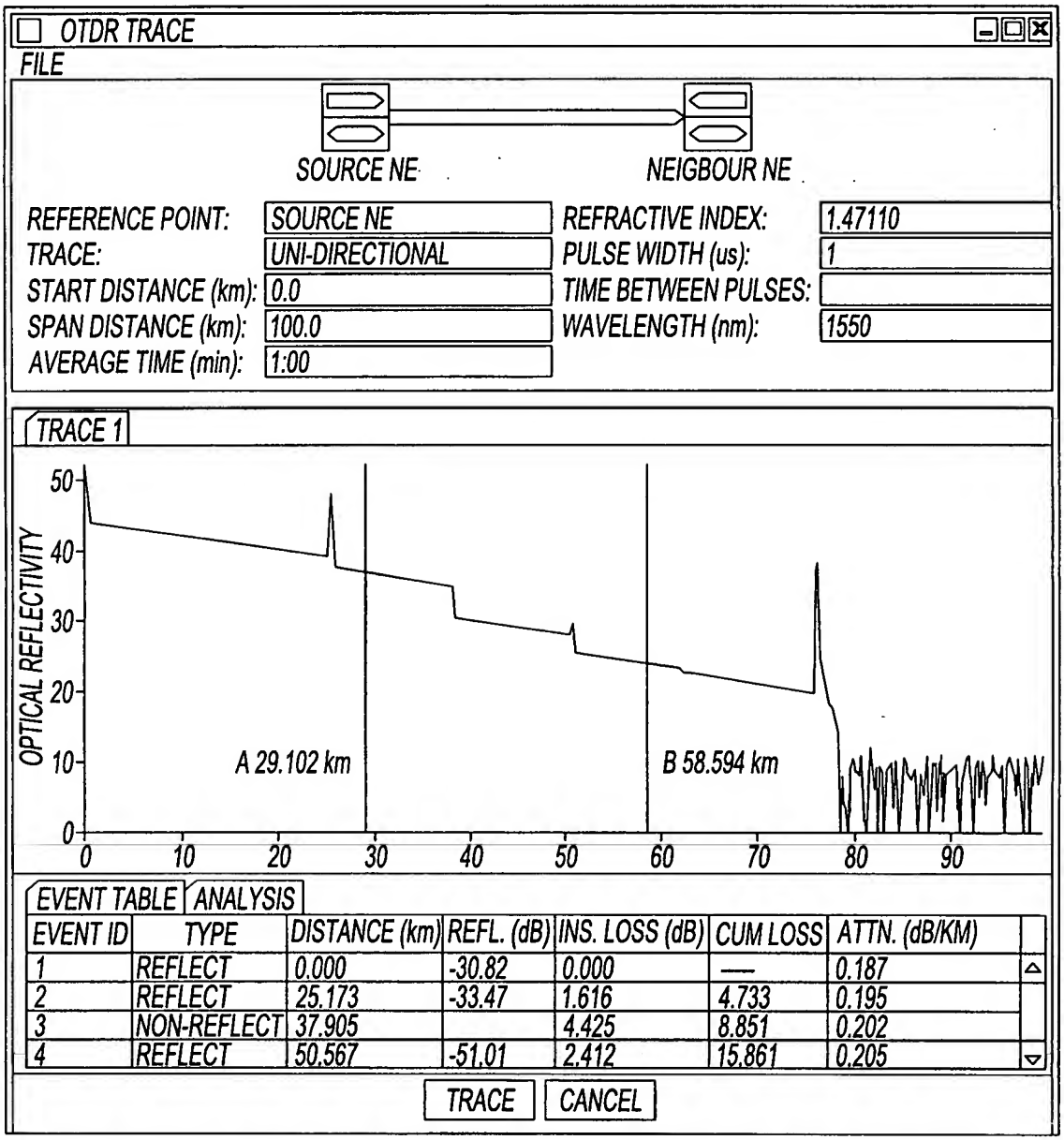
OTDR TRACE
FILE
SOURCE NE
NEIGBOUR NE
REFERENCE POINT: SOURCE NE
TRACE: UNI-DIRECTIONAL
START DISTANCE (km): 0.0
SPAN DISTANCE (km): 100.0
AVERAGE TIME (min): 1:00
REFRACTIVE INDEX: 1.47110
PULSE WIDTH (us): 1
TIME BETWEEN PULSES:
WAVELENGTH (nm): 1550
TRACE 1
OPTICAL REFLECTIVITY
50
40
30
20
10
0
A 29.102 km
B 58.594 km
0
10
20
30
40
50
60
70
80
90
EVENT TABLE
ANALYSIS
EVENT ID | TYPE | DISTANCE (km) | REFL. (dB) | INS. LOSS (dB) | CUM LOSS | ATTN. (dB/KM)
1 | REFLECT | 0.000 | -30.82 | 0.000 | — | 0.187
2 | REFLECT | 25.173 | -33.47 | 1.616 | 4.733 | 0.195
3 | NON-REFLECT | 37.905 | | 4.425 | 8.851 | 0.202
4 | REFLECT | 50.567 | -51.01 | 2.412 | 15.861 | 0.205
TRACE
CANCEL

Fig-4

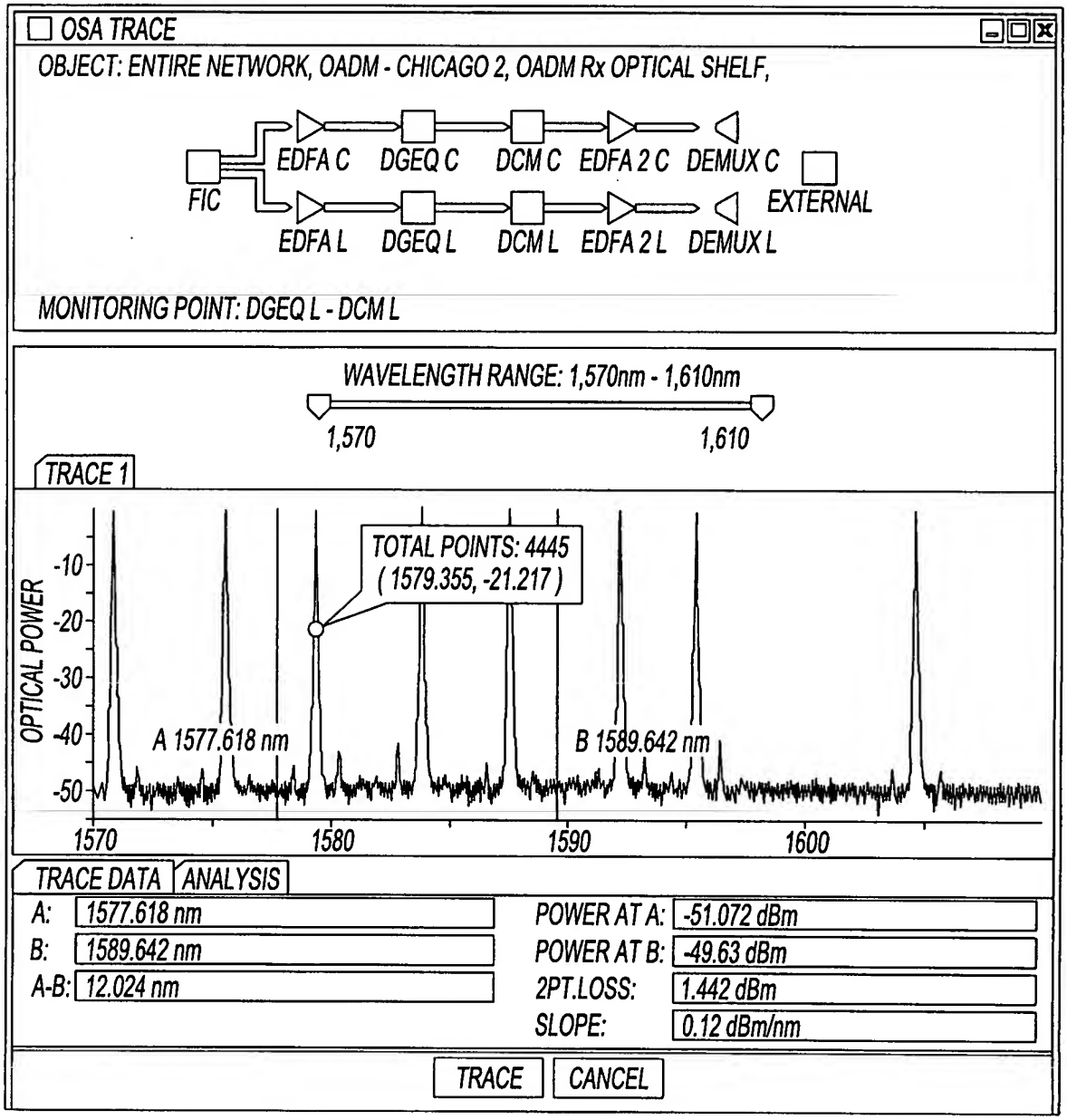
OSA TRACE
OBJECT: ENTIRE NETWORK, OADM - CHICAGO 2, OADM Rx OPTICAL SHELF,
EDFA C
DGEQ C
DCM C
EDFA 2 C
DEMUX C
FIC
EXTERNAL
EDFA L
DGEQ L
DCM L
EDFA 2 L
DEMUX L
MONITORING POINT: DGEQ L - DCM L
WAVELENGTH RANGE: 1,570nm - 1,610nm
1,570
1,610
TRACE 1
TOTAL POINTS: 4445
(1579.355, -21.217)
OPTICAL POWER
-10
-20
-30
-40
-50
A 1577.618 nm
B 1589.642 nm
1570
1580
1590
1600
TRACE DATA
ANALYSIS
A: 1577.618 nm
B: 1589.642 nm
A-B: 12.024 nm
POWER AT A: -51.072 dBm
POWER AT B: -49.63 dBm
2PT.LOSS: 1.442 dBm
SLOPE: 0.12 dBm/nm
TRACE
CANCEL

Fig-6

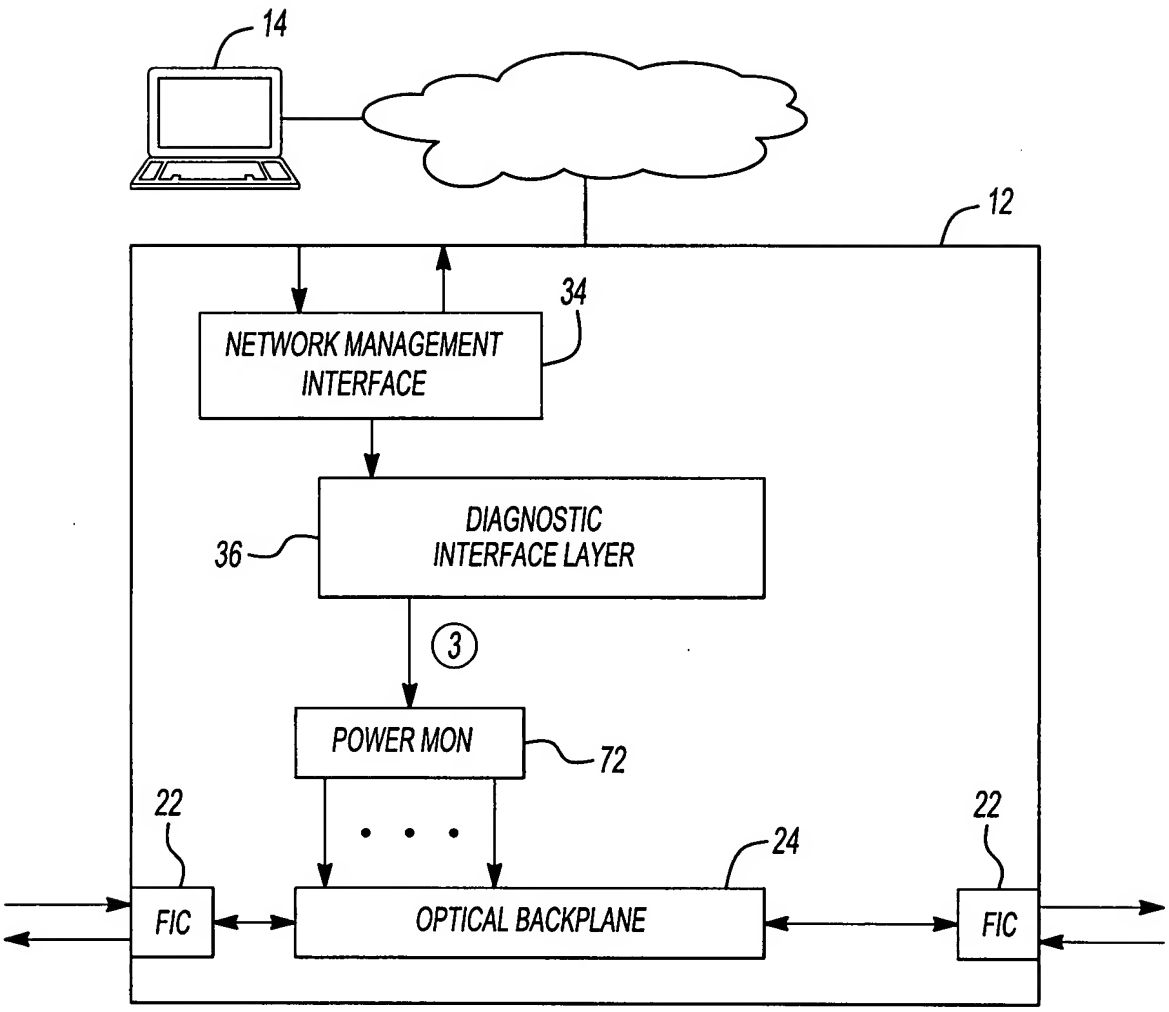
14
12
34
NETWORK MANAGEMENT INTERFACE
DIAGNOSTIC INTERFACE LAYER
36
3
POWER MON
72
22
22
24
FIC
OPTICAL BACKPLANE
FIC

Fig-7

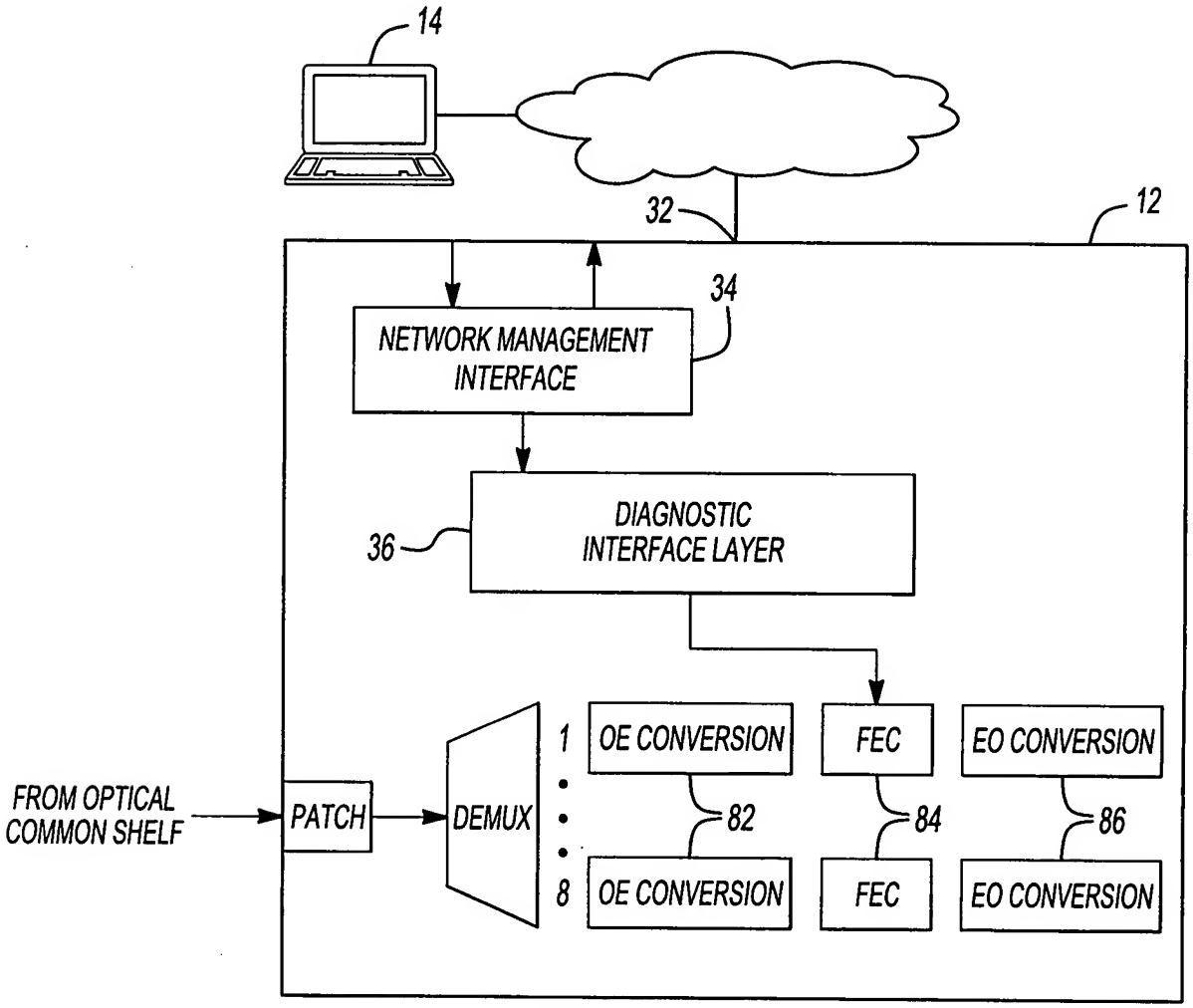
14
32
12
34
NETWORK MANAGEMENT INTERFACE
36
DIAGNOSTIC INTERFACE LAYER
FROM OPTICAL COMMON SHELF
PATCH
DEMUX
1
8
OE CONVERSION
OE CONVERSION
82
FEC
FEC
84
EO CONVERSION
EO CONVERSION
86

Fig-8

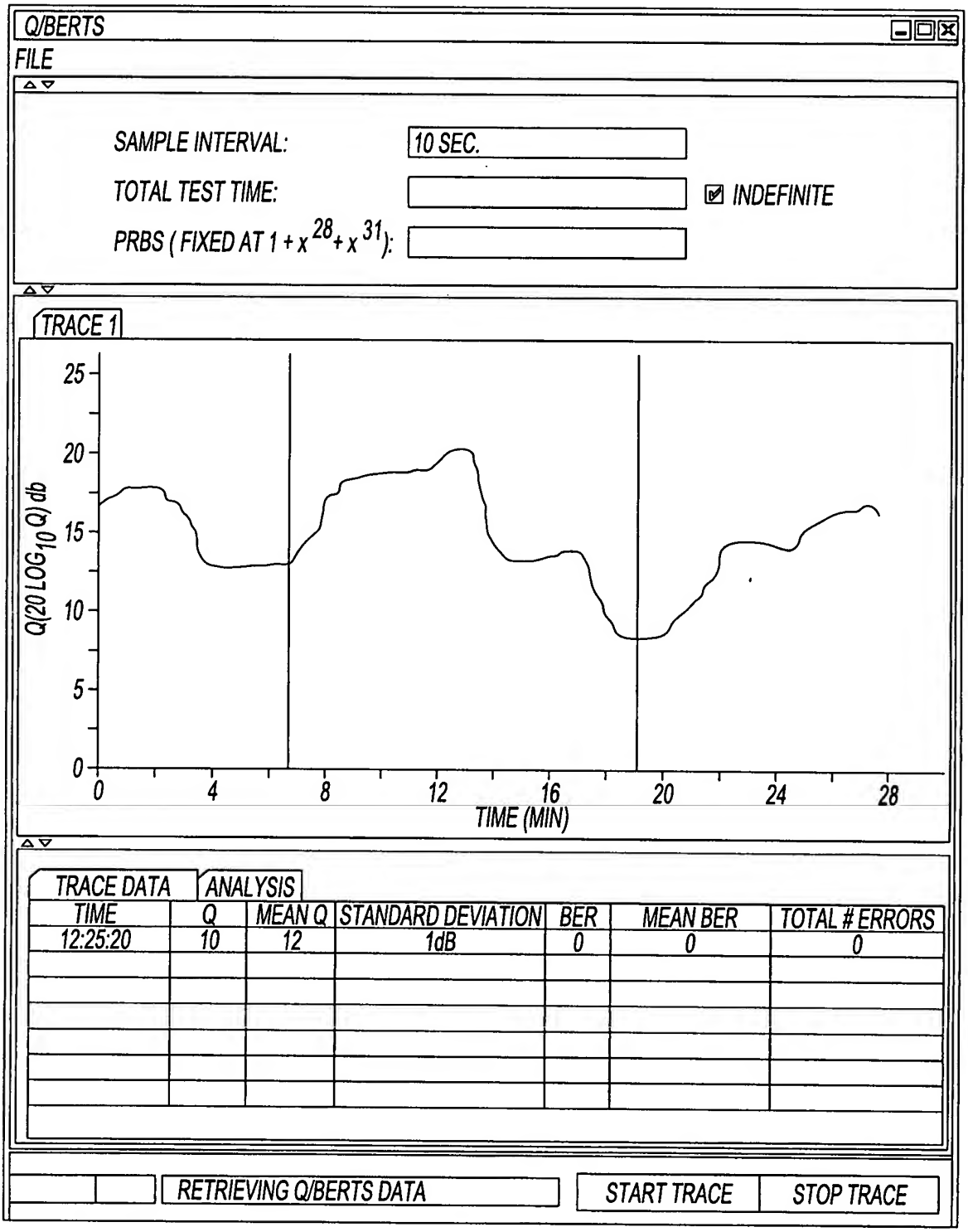
Q/BERTS
FILE
SAMPLE INTERVAL:
10 SEC.
TOTAL TEST TIME:
INDEFINITE
PRBS (FIXED AT 1 + x28 + x31):
TRACE 1
Q(20 LOG10 Q) db
25
20
15
10
5
0
0
4
8
12
16
20
24
28
TIME (MIN)
TRACE DATA
ANALYSIS
TIME
Q
MEAN Q
STANDARD DEVIATION
BER
MEAN BER
TOTAL # ERRORS
12:25:20
10
12
1dB
0
0
0
RETRIEVING Q/BERTS DATA
START TRACE
STOP TRACE

Fig-9

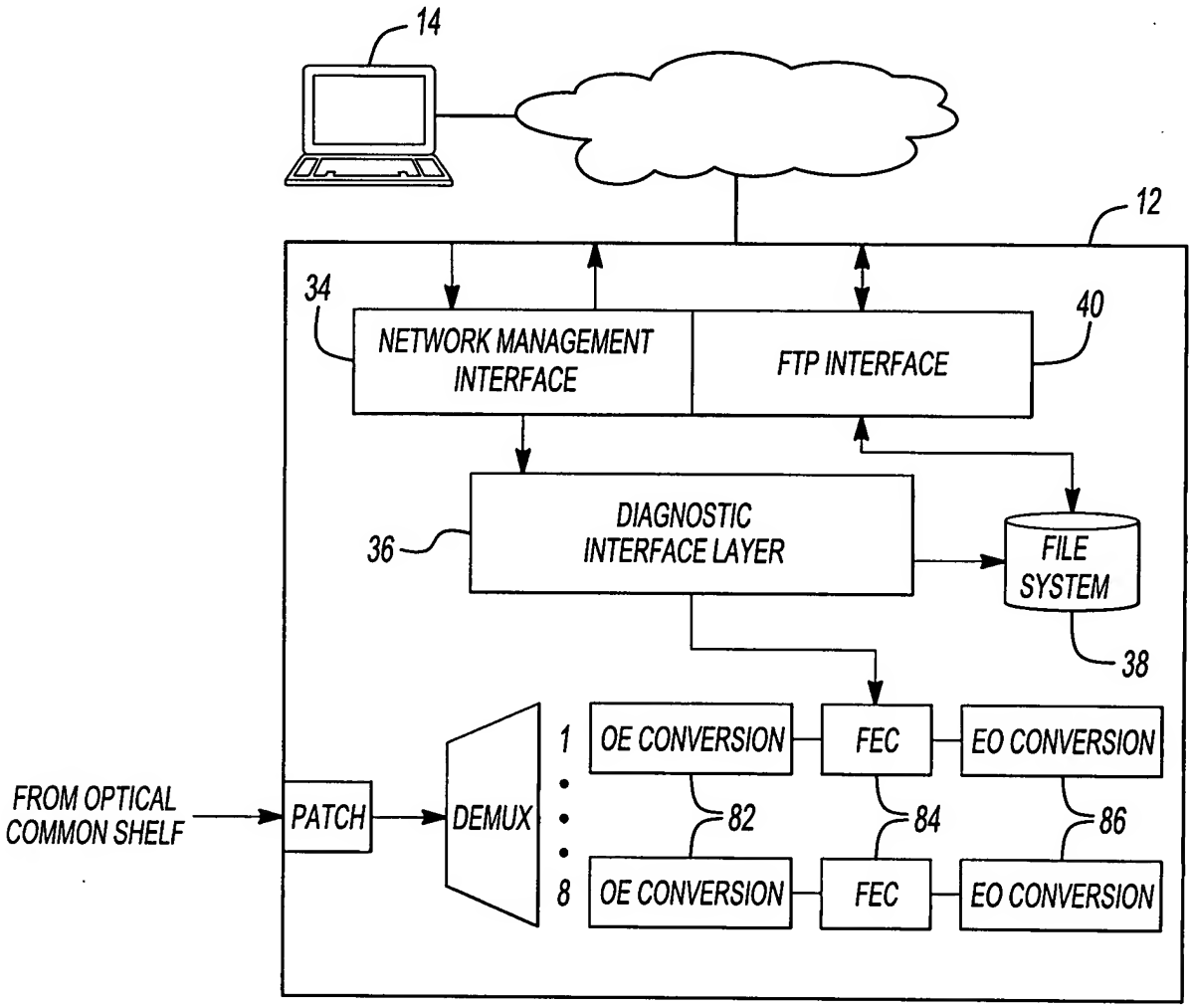
14
12
34
NETWORK MANAGEMENT INTERFACE
FTP INTERFACE
40
DIAGNOSTIC INTERFACE LAYER
36
FILE SYSTEM
38
FROM OPTICAL COMMON SHELF
PATCH
DEMUX
1
8
OE CONVERSION
FEC
EO CONVERSION
82
84
86
OE CONVERSION
FEC
EO CONVERSION

Fig-10

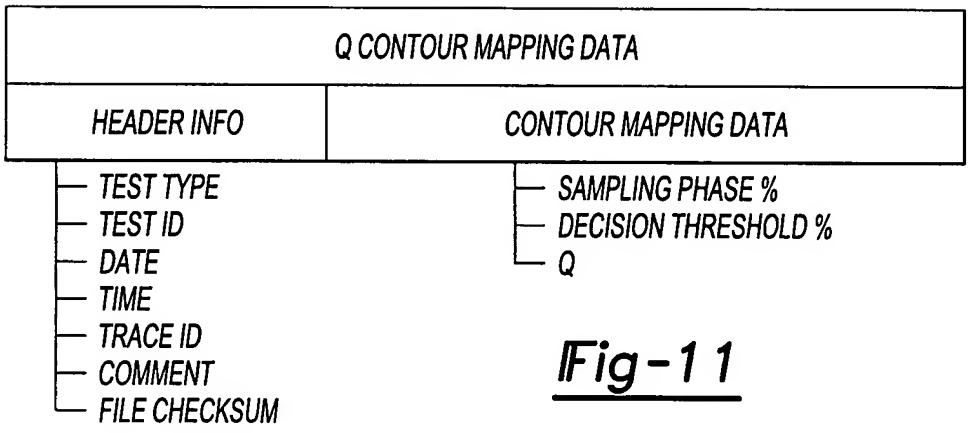
Q CONTOUR MAPPING DATA
HEADER INFO
CONTOUR MAPPING DATA
TEST TYPE
TEST ID
DATE
TIME
TRACE ID
COMMENT
FILE CHECKSUM
SAMPLING PHASE %
DECISION THRESHOLD %
Q

Fig-11

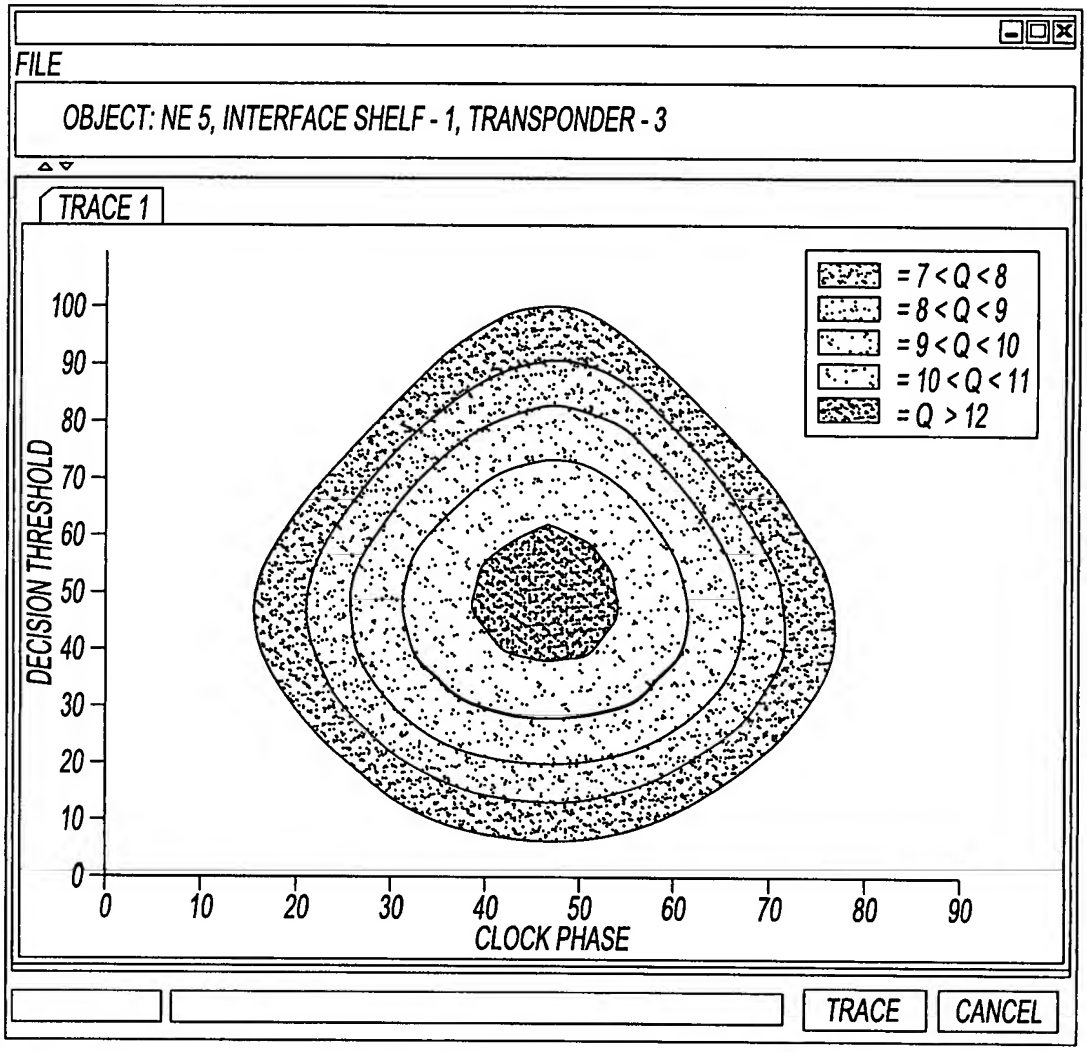
FILE
OBJECT: NE 5, INTERFACE SHELF - 1, TRANSPONDER - 3
TRACE 1
= 7 < Q < 8
= 8 < Q < 9
= 9 < Q < 10
= 10 < Q < 11
= Q > 12
DECISION THRESHOLD
CLOCK PHASE
0
10
20
30
40
50
60
70
80
90
100
TRACE
CANCEL

Fig-12